Bull. Southern California Acad. Sci.
88(3), 1989, pp. 131–134

A New Species of the Genus *Traubella* (Siphonaptera: Ceratophyllidae)

Among fleas found on canyon mice (*Peromyscus crinitus*) collected in southwestern Utah were several specimens of an undescribed species of *Traubella* Prince, Eads and Barnes 1976, the first time this genus had been found in the state. The present paper describes this new taxon.

Traubella grundmanni, new species
Figs. 4–7

Diagnosis.—Selected generic characteristics shared with *Traubella neotomae* (I. Fox, 1940) include: head with frontoclypeal tubercle present but scarcely noticeable; eye relatively small and lightly pigmented except for outer rim; trabecula centralis present; row of minute setae (one to three setae in width) extending full length of dorsal margin of antennal fossae in both sexes. Labial palps five-segmented and about 90 percent as long as forecoxae. Apical spinelets present on first four abdominal terga. One long and two minute flanking antepygidial setae in male, and three long, well-developed antepygidial setae, each of a different length but center one longest, in female. Penis rods not coiled. Ventral anal lobe of female similar in shape, and number, arrangement and size of setae for both species.

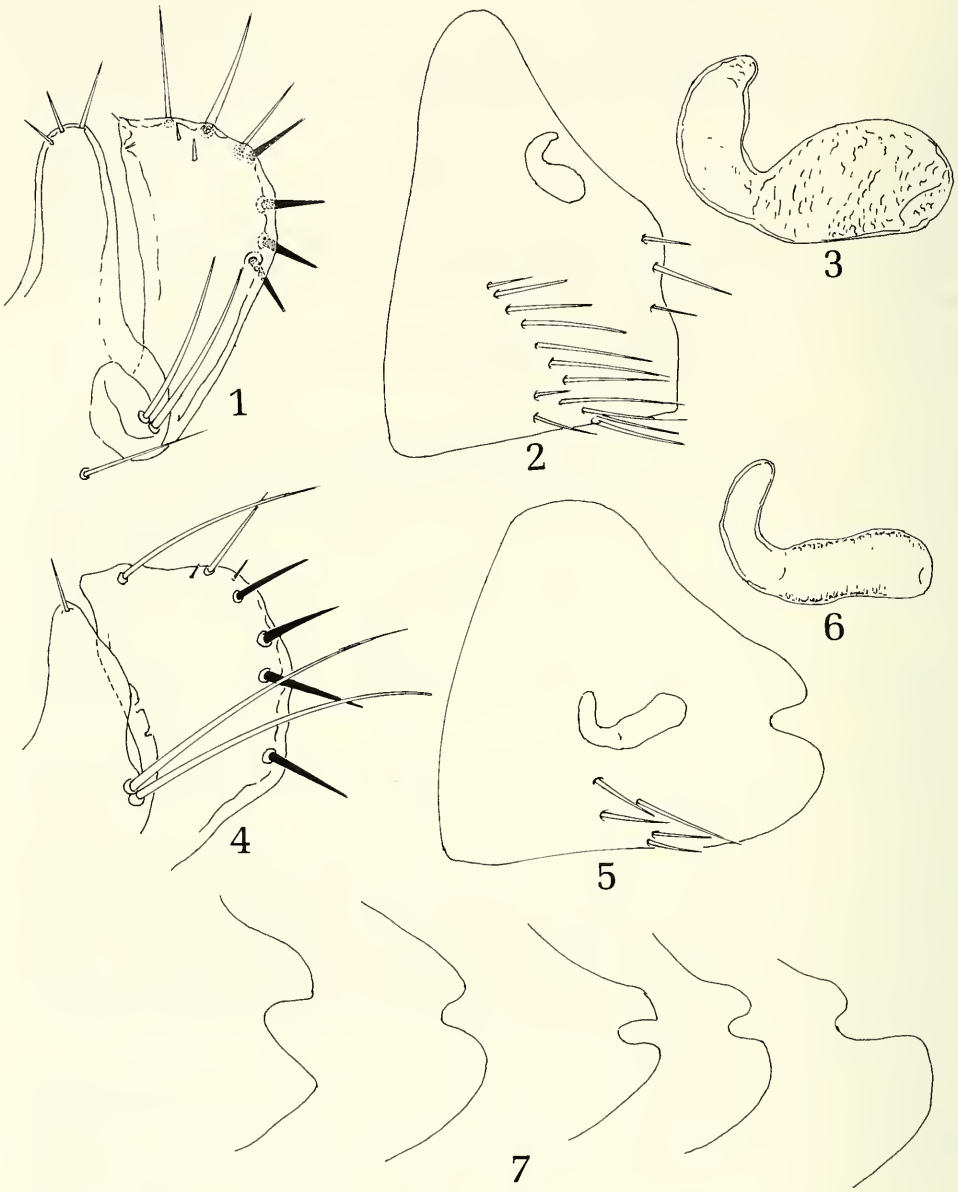
The description that follows compares the new species with *Traubella neotomae* (I. Fox, 1940), the only other known species in the genus.

Modified Abdominal Segments, Male.—Finger longer than fixed process (Fig. 4) rather than equal (Fig. 1), finger almost flat-topped (Fig. 4), not gradually tapered (Fig. 1), and with about 6–7 marginal, unpigmented or lightly pigmented, mostly long, tapering setae of unequal lengths; of these the anterior seta longest, and one (usually the third or fourth seta posterior to apex) much shorter and less developed than others. Apex of fixed process (Fig. 4) somewhat less rounded than in *neotomae* (Fig. 1), tipped with one seta rather than three. Two acetabular setae in about the same position but longer than the two in *neotomae.*

Modified Abdominal Segments, Female.—Anal stylet with one long apical seta and two minute setae along its shaft, as opposed to stylet with one long apical seta flanked by a shorter ventrolateral subapical seta. Posterior border of sternum VII variable (Fig. 7) with deep sinus separating upper narrow, well developed lobe from much broader lower lobe compared to a shallow sinus and broadly rounded, scarcely differentiated upper and lower subequal lobes (Fig. 2). Differences in numbers and position of setae on sternum VII as in Figs. 2 and 5.

Bulga of spermatheca (Fig. 6) approximately the same length as *neotomae* (Fig. 3) but much narrower in diameter and with slightly concave upper and lower borders, not inflated with well rounded upper border and straight lower border; hilla strongly bent and about the same length in both species, but narrower and without sclerotized tip in *grundmanni.*

Size (total length mm, mounted specimens).—Males (N = 3), range 2.7–3.2, average 2.9; Females (N = 9), range 2.8–3.7, average 3.4.



Figs. 1–3. *Traubella neotomae.* Fig. 1, finger and fixed process of male; Fig. 2, sternite VII of female; Fig. 3, spermatheca.

Figs. 4–7. *Traubella grundmanni,* n. sp. Fig. 4, finger and fixed process of male; Fig. 5, sternite VII of female; Fig. 6, spermatheca; Fig. 7, variation in outline of posterior margin, sternite VII of female.

Types.—Holotype male and Allotype female ex *Peromyscus crinitus stephensi* Mearns 1897 (H.J.E. host no. 19135) collected at mouth of Snow Canyon, 3.2 km northeast of Ivins: Washington County, Utah, elev. 945.5 m, 19 November 1988, H. J. Egoscue original numbers 11179 and 11181, respectively.

Paratypes, one male, one female, same data, H. J. Egoscue; two males, five females, same host species, location and elevation, 19 November 1988, H. J. Egoscue; one male, same host and location, elevation 950 m, 17 December 1988, J. Kucera; one female, same data, 18 December 1988, J. Kucera; one male, one female, same data, R. E. Elbel.

Additional material.—Two males (very badly damaged), host unknown, collected 28 or 29 December 1961 at the type locality by A. W. Grundmann and unknown students.

The holotype and allotype will be deposited in the U.S. National Museum, Washington, D.C. Paratypes collected by me will remain, at least temporarily, in my collection; those borrowed from R. E. Elbel and J. Kucera are being returned.

This new species is named for Dr. Albert W. Grundmann, Professor Emeritus, Department of Biology, University of Utah, in recognition of his many years of teaching and research in the field of parasitology and for providing the first specimens of this flea.

Discussion.—*Traubella neotoma* (I. Fox 1940) (Figs. 4–7), type host, *Neotoma lepida,* was originally described by Fox (1940) as a species of *Amphipsylla.* Prince et al. (1976) carefully reviewed the controversial taxonomic history of the taxon and corrected the situation by erecting the genus *Traubella* to hold *neotomae.* They also adequately discussed the many similarities between *Traubella* and *Malaraeus* and indicated the closest affinities of *Traubella* were with what was then called the *telchinus* group (*eremicus, sinomus* and *telchinus*) with which *Traubella* was compared.

Traubella grundmanni is known only from the type locality, where its preferred or true host appears to be *Peromyscus crinitus stephensi.* Special efforts to find *grundmanni* on other species of small mammals at Snow Canyon were unsuccessful. More intensive year-around collecting at Castle Cliff and environs less than 32 km distant on the west slope of Beaver Dam Mountains yielded no specimens of the new flea from either woodrat nests or numerous hosts of several rodent species which, however, included very few canyon mice.

The type locality of *grundmanni* is located among colorful sandstone formations in what is often called "red rock country." Dominant shrubs along the dry wash leading out of Snow Canyon include creosote bush, *Larrea tridentata,* and sand sagebrush, *Artemisia filifolia.* But the lava flows and cliffs favored by canyon mice there are very sparsely vegetated and lack characteristic shrubs. The climate in this part of Utah is characterized by low annual rainfall, wide ranges in temperatures, long, hot summers and relatively mild winters—conditions probably quite similar to those in southern California and other parts of the arid southwest where *Traubella neotomae* has been reported (Prince et al. 1976). Both species of *Traubella* are apparently winter fleas.

Acknowledgments

I am grateful to R. E. Elbel and J. Kucera of the University of Utah for their help, encouragement and companionship on several field trips and for critically reading the manuscript. H. E. Stark also reviewed the paper and gave useful suggestions. R. E. Lewis of Iowa State University kindly took time from his busy schedule to provide taxonomic advice. The work was supported in part by BRSG S07 O7092 awarded by the Biomedical Research Support Program, Division of

Research Resources, National Institutes of Health to the University of Utah. Permission to use drawings based on photomicrographs of *Traubella neotomae* in The Rothschild Collection of Fleas, The Ceratophyllidae: Key to the Genera and Host Relationships, by Traub, Rothschild and Haddow (1983) was given by Academic Press and Meriam Rothschild.

Literature Cited

Fox, I. 1940. Siphonaptera from western United States. J. Washington Acad. Science, 30:272–276.

Prince, F. M., R. B. Eads, and A. M. Barnes. 1976. *Traubella,* a new genus of flea (Siphonaptera: Ceratophyllidae). J. Medical Entomol., 13:162–168.

Traub, R., M. Rothschild, and J. Haddow. 1983. The Rothschild collection of fleas: the Ceratophyllidae, key to the genera and host relationships. Univ. Press, Cambridge, England, 288 pp.

Accepted for publication 10 May 1989.

Harold J. Egoscue, *Post Office Box 787, Grantsville, Utah 84029.*